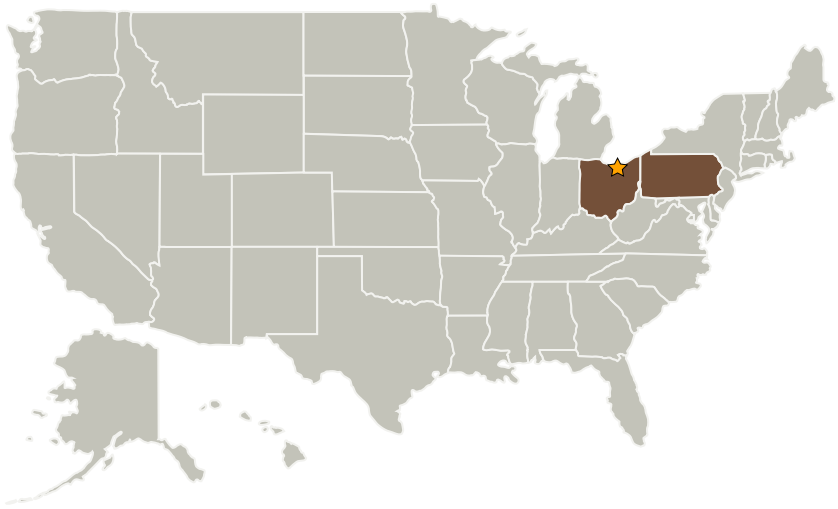
Cryogenic Capacitors for Low-Temperature Power Systems, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

TRS Technologies proposes to develop low-temperature multilayer ceramic capacitors (MLCCs) capable of operating at cyrogenic temperatures (<77K). These capacitors will be based upon quantum paraelectrics and relaxor ferroelectrics. The MLCCs will have high volumetric efficiencies, low dielectric losses, and a reduced temperature coefficient of capacitance. In the Phase I program TRS will fabricate MLCCs that operate at or below 77K and will demonstrate their feasibility for cryogenic capacitors by characterizing the dielectric properties (capacitance, loss, insulation resistance, breakdown strength, etc.) at temperature from 12K to 300K.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
TRS Ceramics, Inc.	Supporting Organization	Industry	State College, Pennsylvania

Primary U.S. Work Locations	
Ohio	Pennsylvania

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Edward Alberta

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.1 Cryogenic Systems
    - TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors